

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Currently amended) A hydraulic tensioner for use in a high tensile force environment where space is limited, said tensioner applying tension to a studbolt ~~or similar, fitted with a nut,~~ extending from an article ~~or machine~~, said tensioner comprising:

a puller bar having a threaded end for threaded engagement in an internal thread in an end
5 of the studbolt;

a nut assembly for fitment to the studbolt in a position against the article, said nut assembly comprising a nut body with a downwardly and inwardly substantially conical or tapered peripheral outer surface, and an annular collar or shell with a complementary conical or tapered recess to receive the nut body, in use;

10 a bridge for extending around and over the nut body, engageable with the collar or shell ~~article or machine~~; and

hydraulic means for acting between the puller bar and bridge and operable to cause the puller bar to tension the studbolt by pulling ~~the one said~~ end of the studbolt in a direction away from the article ~~or machine~~.

2. (Currently amended) A hydraulic tensioner as claimed in Claim 1, and further including:

a puller buddy engageable with an external thread about ~~the one said~~ end of the studbolt and engageable with the puller bar so that when the puller bar is moved to tension the studbolt,
5 the puller buddy is also moved to tension the studbolt.

3. (Currently amended) A hydraulic tensioner as claimed in Claim 1, wherein:
the internal thread in the studbolt is stepped in diameter and the puller bar has a threaded end with complementary ~~stepped~~ stepped external threads.

4. (Currently amended) A hydraulic tensioner as claimed in Claim 1, wherein:
the internal thread in the studbolt is substantially conical or tapered; and

the threaded end of the puller bar has a ~~thread end with~~ a complementary substantially conical or tapered external thread.

5. (Currently amended) A hydraulic tensioner as claimed in Claim 4 wherein:
the internal thread on the studbolt and the externally threaded ~~external thread on the end~~
of the puller bar are equally ~~of tapered, and the threads comprise~~ buttress threads.

6. (Currently amended) A hydraulic tensioner as claimed in Claim 5 wherein:
the taper of the internal thread on the studbolt and the taper of the externally threaded end
of the puller bar are ~~shoulders of the buttress threads are~~ at an angle of approximately ~~10~~ 10° to
the normal to the horizontal axes of the studbolt and puller bar.

7. (Original) A hydraulic tensioner as claimed in Claim 6 wherein:
the pitch of the external thread on the puller bar is greater than the pitch of the internal
thread in the studbolt.

8. (Currently amended) A hydraulic tensioner as claimed in Claim 7 wherein:
the pitch of the ~~thread on the~~ external thread on the puller bar is 100.1% to 100.5% of the
pitch of the mating thread in the studbolt.

9. (Currently amended) A coupling ~~for the~~ for an hydraulic tensioner ~~of the type as~~
~~claimed in Claim 1, wherein:~~ for applying tension to a studbolt extending from an article and
fitted with a nut, wherein said tensioner comprises a puller bar for engagement with an end of the
studbolt, hydraulic means acting between the puller bar and article and operable to cause the
5 puller bar to tension the studbolt by pulling said end of the studbolt in a direction away from the
article, and a bridge extending around and over the nut for transmitting reactive force from the
hydraulic means to the article, and wherein said coupling comprises:

~~the internal thread on an internally threaded bore in an end of the studbolt and the a~~
complementary externally threaded ~~external thread on the end of~~ on the puller bar, said internally

- 10 threaded bore and said externally threaded end being ~~are of~~ tapered, and said threads being substantially uniform and constant throughout their length and comprising buttress threads.

10. (Currently amended) A coupling as claimed in Claim 9 wherein:
the shoulders of the buttress threads are ~~at an angle of approximately 10° (to the normal~~
substantially perpendicular to the common axes of the studbolt and puller ~~bar~~ bar).

11. (Original) A coupling as claimed in Claim 10 wherein:
the pitch of the external thread on the puller bar is greater than the pitch of the internal thread in the studbolt.

12. (Original) A coupling as claimed in Claim 11 wherein:
the pitch of the external thread on the puller bar is 100.1% to 100.5% of the pitch of the mating thread in the studbolt.

13. (Currently amended) A nut assembly for use with the coupling hydraulic
~~tensioner~~, as claimed in claim 9 ~~any one of Claims 1 to 8~~, the nut assembly comprising:
a nut body with a substantially conical or tapered peripheral outer surface;
an annular collar or shell with a complementary conical or tapered recess to receive the
5 nut body, in use; and
the nut body being screwed, in use, on the studbolt into the recess of the annular collar or shell.

14. (Original) A nut assembly as claimed in Claim 13 and further including:
a base washer having a substantially part-spherical face engageable by a complementary part-spherical face on the annular collar or shell to enable the base washer and annular collar or shell to be self-aligning.

15. (Currently amended) A washer for use between the nut assembly and article ~~with~~
~~in the tensioner as claimed in Claim 1 and/or the nut assembly as claimed in Claim 13,~~ said
washer ~~having including or~~ comprising:

a first and second annular means mating at a slip plane angled from the plane transverse
5 to the axis of the washer; and

removable or releasable means holding the first and second annular means against
relative slip over the slip plane therebetween whilst the removable or releasable means is in
place.

16. (Currently amended) An hydraulic tensioner for application with a stud bolt
extending from an article and fitted with a nut, said tensioner comprising:

a puller bar having a longitudinal axis and a tapered end, said tapered end having an
external thread for engagement in an internal thread ~~with~~ in an end of the studbolt, said external
5 and internal threads comprising buttress threads having a shoulder or flank lying substantially
perpendicular to the longitudinal axis of the puller bar;

a puller buddy having an internally threaded end for engagement with an external thread
on said end of the studbolt, and means engageable with ~~and with~~ the puller bar; and

an hydraulic means acting via a bridge around and/or over ~~a nut~~ said nut and against the
10 puller bar to pull the puller bar and puller buddy in a direction away from the article to tension
the studbolt.

17. (Currently amended) A nut assembly for use with an ~~the~~ hydraulic tensioner for
applying tension to a studbolt extending from an article, wherein the tensioner includes a puller
bar for connection with an end of the studbolt, and an hydraulic means acting via a bridge
between the puller bar and article to exert a pulling force on the studbolt in a direction away from
5 the article, claimed in Claim 16, the nut said nut assembly comprising:

a nut body with a substantially conical or tapered peripheral outer surface;

an annular shell with complementary conical or tapered recess to receive the nut body, in
use;

the nut body being screwed, in use, ~~on a~~ on said studbolt and into the recess of the
10 annular shell.

18. (Currently amended) A washer for use between the nut and article in ~~with~~ the
tensioner as claimed in Claim 16, the washer comprising:

first and second annular means mating at a slip plane angled from the plane transverse to
the axis of the washer; and

5 removable or releasable means holding the first and second annular means against
relative slip over the slip plane therebetween whilst the removable or releasable means is in
place.

19. (Currently amended) A coupling ~~hydraulic tensioner~~ as claimed in Claim 9 ~~2~~ or
wherein:

the internal thread in the studbolt is stepped in diameter and the threaded end of the puller
bar has ~~a threaded end with~~ complementary stepped external threads.

20. (Currently amended) A coupling ~~hydraulic tensioner~~ as claimed in Claim 9 ~~2~~
wherein:

the internal thread in the studbolt is substantially conical or tapered; and

the threaded end of the puller bar has a ~~thread end with a complementary~~ substantially
5 complementary taper ~~conical or tapered external thread~~.

21. (Currently amended) A coupling for the hydraulic tensioner of the type as
claimed in Claim 2 wherein:

the internal thread on the studbolt and the externally threaded ~~external thread on the~~ end
of the puller bar are tapered, and comprise of tapered buttress threads.

22. (Currently amended) A coupling for the hydraulic tensioner of the type as
claimed in Claim 4 wherein:

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the internal thread on the studbolt and the external thread on the end of the puller bar are of tapered buttress threads.

23 - 31. (Cancelled).

32. (New) A washer for use with the tensioner as claimed in Claim 8, said washer comprising:

a first and second annular means mating at a slip plane angled from the plane transverse to the axis of the washer; and

5 removable or releasable means holding the first and second annular means against relative slip over the slip plane therebetween whilst the removable or releasable means is in place.

33. (New) A washer for use between the nut and article in the tensioner as claimed in Claim 9, said washer comprising:

a first and second annular means mating at a slip plane angled from the plane transverse to the axis of the washer; and

5 removable or releasable means holding the first and second annular means against relative slip over the slip plane therebetween whilst the removable or releasable means is in place.

34. (New) An hydraulic tensioner as claimed in claim 16, wherein:

said tapered end of said puller bar is tapered at an angle of 10° relative to the longitudinal axis of the puller bar.

35. (New) An hydraulic tensioner as claimed in claim 34, wherein:

the pitch of the external thread on the puller bar is greater than the pitch of the internal thread in the end of the studbolt.

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36. (New) An hydraulic tensioner as claimed in claim 35, wherein:
the pitch of the external thread on the puller bar is 3.005 mm and the pitch
of the thread in the end of the studbolt is 3.00 mm.